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37642

213

ABRIDGED U. S. PETROLEUM OIL TABLE

Prepared by

The U. S. Bureau of Standards

VOLUME AT 60°F. OCCUPIED BY UNIT VOLUME AT INDICATED TEMPERATURE

This table shows the volume occupied at 60°F. by a quantity of oil of any degrees A.P.I. occupying unit volume at the indicated temperature. For example, if a volume of oil of 43 degrees A.P.I. is measured at 105°F. one gallon at 105°F. will occupy a volume of 0.9779 gallons at 60°F. That is, the volume at 60°F. of any oil in the gravity range 35.0 to 50.9 A.P.I. will be found in the column headed by that range and opposite the temperature at which the volume is measured. Similarly the volume of any other oil at 60°F. will be found in the column headed by the gravity range in which that particular oil falls, and opposite the temperature at which the volume is measured.

The values given in the body of the table are in the form of "Multipliers", that is, the volume of oil of a certain commercial grade at the indicated temperature multiplied by the corresponding factor in the table gives the volume at 60°F. For example, if a volume of 5600 gallons of oil of 43 degrees A.P.I. at 60°F. is measured at 105°F., the volume at 60°F. is $5600 \times .9779$ or 5476.24 gallons.

This table is an abridgement of Table 2, Circular No. 154, Bureau of Standards, and is intended to cover the bulk of present commercial grades of oils. For any oils not adequately covered by the abridged table the complete table should be used.

This table has not been officially approved by the Bureau of Standards, but is offered as a suggestion to indicate what the Bureau believes to be a satisfactory method of procedure in case an abridged volume correction table is regarded as necessary.

| | 16 | 28 | 43 | 57 | 63 | 70 | 80 | 90 |
|----------|--|--------|--------|---------|--------|----------|--------|--------|
| | 10.0 | 25.0 | 35.0 | Degrees | A.P.I. | at 60°F. | | |
| Observed | to | to | to | 51.0 | 60.0 | 65.0 | 75.0 | 85.0 |
| Tempera- | 24.9 | 34.9 | 50.9 | to | to | to | to | and |
| ture in | Volume at 60°F. Occupied by Unit Volume at Indicated | | | | | | | |
| °F. | Temperature. | | | | | | | |
| 0 | 1.0233 | 1.0252 | 1.0294 | 1.0356 | 1.0382 | 1.0411 | 1.0451 | 1.0496 |
| 1 | 1.0229 | 1.0248 | 1.0289 | 1.0350 | 1.0376 | 1.0404 | 1.0444 | 1.0488 |
| 2 | 1.0225 | 1.0244 | 1.0284 | 1.0344 | 1.0370 | 1.0397 | 1.0436 | 1.0480 |
| 3 | 1.0221 | 1.0239 | 1.0280 | 1.0339 | 1.0363 | 1.0391 | 1.0429 | 1.0471 |
| 4 | 1.0217 | 1.0235 | 1.0275 | 1.0333 | 1.0357 | 1.0384 | 1.0421 | 1.0463 |
| 5 | 1.0213 | 1.0231 | 1.0270 | 1.0327 | 1.0351 | 1.0377 | 1.0414 | 1.0455 |
| 6 | 1.0209 | 1.0227 | 1.0265 | 1.0321 | 1.0345 | 1.0370 | 1.0407 | 1.0447 |
| 7 | 1.0205 | 1.0223 | 1.0260 | 1.0315 | 1.0338 | 1.0363 | 1.0399 | 1.0439 |
| 8 | 1.0201 | 1.0218 | 1.0255 | 1.0309 | 1.0332 | 1.0357 | 1.0392 | 1.0430 |
| 9 | 1.0197 | 1.0214 | 1.0250 | 1.0303 | 1.0325 | 1.0350 | 1.0384 | 1.0422 |
| 10 | 1.0193 | 1.0210 | 1.0245 | 1.0297 | 1.0319 | 1.0343 | 1.0377 | 1.0414 |
| 11 | 1.0189 | 1.0206 | 1.0240 | 1.0291 | 1.0313 | 1.0336 | 1.0370 | 1.0406 |
| 12 | 1.0185 | 1.0202 | 1.0235 | 1.0285 | 1.0307 | 1.0329 | 1.0362 | 1.0398 |
| 13 | 1.0181 | 1.0197 | 1.0231 | 1.0280 | 1.0300 | 1.0323 | 1.0355 | 1.0389 |
| 14 | 1.0177 | 1.0193 | 1.0226 | 1.0274 | 1.0294 | 1.0316 | 1.0347 | 1.0381 |
| 15 | 1.0173 | 1.0189 | 1.0221 | 1.0268 | 1.0288 | 1.0309 | 1.0340 | 1.0373 |
| 16 | 1.0169 | 1.0185 | 1.0216 | 1.0262 | 1.0282 | 1.0302 | 1.0332 | 1.0365 |
| 17 | 1.0165 | 1.0181 | 1.0211 | 1.0256 | 1.0275 | 1.0295 | 1.0325 | 1.0357 |
| 18 | 1.0162 | 1.0176 | 1.0206 | 1.0250 | 1.0269 | 1.0289 | 1.0317 | 1.0348 |
| 19 | 1.0158 | 1.0172 | 1.0201 | 1.0244 | 1.0262 | 1.0282 | 1.0310 | 1.0340 |
| 20 | 1.0154 | 1.0168 | 1.0196 | 1.0238 | 1.0256 | 1.0275 | 1.0302 | 1.0332 |
| 21 | 1.0150 | 1.0164 | 1.0191 | 1.0232 | 1.0250 | 1.0268 | 1.0295 | 1.0324 |
| 22 | 1.0146 | 1.0160 | 1.0186 | 1.0226 | 1.0243 | 1.0261 | 1.0287 | 1.0316 |
| 23 | 1.0143 | 1.0155 | 1.0182 | 1.0220 | 1.0237 | 1.0255 | 1.0280 | 1.0307 |
| 24 | 1.0139 | 1.0151 | 1.0177 | 1.0214 | 1.0230 | 1.0248 | 1.0272 | 1.0299 |
| 25 | 1.0135 | 1.0147 | 1.0172 | 1.0208 | 1.0224 | 1.0241 | 1.0265 | 1.0291 |
| 26 | 1.0131 | 1.0143 | 1.0167 | 1.0202 | 1.0218 | 1.0234 | 1.0257 | 1.0283 |
| 27 | 1.0127 | 1.0139 | 1.0162 | 1.0196 | 1.0211 | 1.0227 | 1.0250 | 1.0275 |
| 28 | 1.0124 | 1.0134 | 1.0157 | 1.0191 | 1.0205 | 1.0221 | 1.0242 | 1.0266 |
| 29 | 1.0120 | 1.0130 | 1.0152 | 1.0185 | 1.0198 | 1.0214 | 1.0235 | 1.0258 |
| 30 | 1.0116 | 1.0126 | 1.0147 | 1.0179 | 1.0192 | 1.0207 | 1.0227 | 1.0250 |
| 31 | 1.0112 | 1.0122 | 1.0142 | 1.0173 | 1.0186 | 1.0200 | 1.0220 | 1.0242 |
| 32 | 1.0108 | 1.0118 | 1.0137 | 1.0167 | 1.0179 | 1.0193 | 1.0212 | 1.0234 |
| 33 | 1.0104 | 1.0113 | 1.0133 | 1.0161 | 1.0173 | 1.0186 | 1.0205 | 1.0225 |
| 34 | 1.0100 | 1.0109 | 1.0128 | 1.0155 | 1.0166 | 1.0179 | 1.0197 | 1.0217 |
| 35 | 1.0096 | 1.0105 | 1.0123 | 1.0149 | 1.0160 | 1.0172 | 1.0190 | 1.0209 |
| 36 | 1.0092 | 1.0101 | 1.0118 | 1.0143 | 1.0154 | 1.0165 | 1.0182 | 1.0201 |
| 37 | 1.0088 | 1.0097 | 1.0113 | 1.0137 | 1.0147 | 1.0158 | 1.0175 | 1.0192 |
| 38 | 1.0085 | 1.0092 | 1.0108 | 1.0131 | 1.0141 | 1.0152 | 1.0167 | 1.0184 |
| 39 | 1.0081 | 1.0088 | 1.0103 | 1.0125 | 1.0134 | 1.0145 | 1.0160 | 1.0175 |
| 40 | 1.0077 | 1.0084 | 1.0098 | 1.0119 | 1.0128 | 1.0138 | 1.0152 | 1.0167 |
| 41 | 1.0073 | 1.0080 | 1.0093 | 1.0113 | 1.0122 | 1.0131 | 1.0144 | 1.0159 |
| 42 | 1.0069 | 1.0076 | 1.0088 | 1.0107 | 1.0115 | 1.0124 | 1.0137 | 1.0150 |
| 43 | 1.0065 | 1.0071 | 1.0084 | 1.0102 | 1.0109 | 1.0118 | 1.0129 | 1.0142 |
| 44 | 1.0061 | 1.0067 | 1.0079 | 1.0096 | 1.0102 | 1.0111 | 1.0122 | 1.0133 |
| 45 | 1.0057 | 1.0063 | 1.0074 | 1.0090 | 1.0096 | 1.0104 | 1.0114 | 1.0125 |
| 46 | 1.0053 | 1.0059 | 1.0069 | 1.0084 | 1.0090 | 1.0097 | 1.0106 | 1.0117 |
| 47 | 1.0049 | 1.0055 | 1.0064 | 1.0078 | 1.0083 | 1.0090 | 1.0099 | 1.0109 |
| 48 | 1.0046 | 1.0050 | 1.0059 | 1.0071 | 1.0077 | 1.0083 | 1.0091 | 1.0100 |
| 49 | 1.0042 | 1.0046 | 1.0054 | 1.0065 | 1.0070 | 1.0076 | 1.0084 | 1.0092 |
| 50 | 1.0038 | 1.0042 | 1.0049 | 1.0059 | 1.0064 | 1.0069 | 1.0076 | 1.0084 |
| 51 | 1.0034 | 1.0038 | 1.0044 | 1.0053 | 1.0058 | 1.0062 | 1.0068 | 1.0076 |
| 52 | 1.0030 | 1.0034 | 1.0039 | 1.0047 | 1.0051 | 1.0055 | 1.0061 | 1.0067 |
| 53 | 1.0027 | 1.0029 | 1.0035 | 1.0042 | 1.0045 | 1.0049 | 1.0053 | 1.0059 |
| 54 | 1.0023 | 1.0025 | 1.0030 | 1.0036 | 1.0038 | 1.0042 | 1.0046 | 1.0050 |
| 55 | 1.0019 | 1.0021 | 1.0025 | 1.0030 | 1.0032 | 1.0035 | 1.0038 | 1.0042 |
| 56 | 1.0015 | 1.0017 | 1.0020 | 1.0024 | 1.0026 | 1.0028 | 1.0030 | 1.0034 |
| 57 | 1.0011 | 1.0013 | 1.0015 | 1.0018 | 1.0019 | 1.0021 | 1.0023 | 1.0025 |
| 58 | 1.0008 | 1.0008 | 1.0010 | 1.0012 | 1.0013 | 1.0014 | 1.0015 | 1.0017 |
| 59 | 1.0004 | 1.0004 | 1.0005 | 1.0006 | 1.0006 | 1.0007 | 1.0008 | 1.0008 |
| 60 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| 61 | .9996 | .9996 | .9995 | .9994 | .9994 | .9993 | .9992 | .9992 |
| 62 | .9992 | .9992 | .9990 | .9988 | .9987 | .9986 | .9985 | .9983 |
| 63 | .9989 | .9987 | .9985 | .9983 | .9981 | .9979 | .9977 | .9975 |
| 64 | .9985 | .9983 | .9980 | .9977 | .9974 | .9972 | .9970 | .9966 |

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 108. *Pharmaceuticals* (2105) 117: 101-110.
 109. *Pharmaceuticals* (2106) 118: 101-110.
 110. *Pharmaceuticals* (2107) 119: 101-110.

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100

[illegible]

the 1990s, the number of people in the world who are illiterate has increased from 1.2 billion to 1.5 billion. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015.

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| Observed Temperature in °F. | Degrees A.P.I. at 60°F | | | | | | | |
|--|------------------------|------------|------------|------------|------------|------------|------------|--------------|
| | 10.0 | 25.0 | 35.0 | 51.0 | 60.0 | 65.0 | 75.0 | 85.0 |
| | to 24.9 | to 34.9 | to 50.9 | to 59.9 | to 64.9 | to 74.9 | to 84.9 | and above |
| Volume at 60°F. Occupied by Unit Volume at Indicated Temperature | | | | | | | | |
| 65 | 0.9981 | 0.9979 | 0.9975 | 0.9971 | 0.9968 | 0.9965 | 0.9962 | 0.9958 |
| 66 | .9977 | .9975 | .9970 | .9965 | .9962 | .9958 | .9954 | .9950 |
| 67 | .9973 | .9971 | .9965 | .9958 | .9955 | .9951 | .9947 | .9941 |
| 68 | .9970 | .9966 | .9961 | .9952 | .9949 | .9945 | .9939 | .9933 |
| 69 | .9966 | .9962 | .9956 | .9946 | .9942 | .9938 | .9932 | .9924 |
| 70 | .9962 | .9958 | .9951 | .9940 | .9936 | .9931 | .9924 | .9916 |
| 71 | .9958 | .9954 | .9946 | .9934 | .9929 | .9924 | .9916 | .9908 |
| 72 | .9954 | .9950 | .9941 | .9928 | .9923 | .9917 | .9908 | .9899 |
| 73 | .9951 | .9946 | .9936 | .9922 | .9916 | .9910 | .9901 | .9891 |
| 74 | .9947 | .9942 | .9931 | .9916 | .9910 | .9903 | .9893 | .9882 |
| 75 | .9943 | .9938 | .9926 | .9910 | .9903 | .9896 | .9885 | .9874 |
| 76 | .9939 | .9934 | .9921 | .9904 | .9897 | .9889 | .9877 | .9866 |
| 77 | .9935 | .9930 | .9916 | .9898 | .9891 | .9882 | .9870 | .9857 |
| 78 | .9932 | .9925 | .9912 | .9893 | .9884 | .9875 | .9862 | .9849 |
| 79 | .9928 | .9921 | .9907 | .9887 | .9878 | .9868 | .9855 | .9840 |
| 80 | .9924 | .9917 | .9902 | .9881 | .9872 | .9861 | .9847 | .9832 |
| 81 | .9920 | .9913 | .9897 | .9875 | .9863 | .9854 | .9839 | .9823 |
| 82 | .9916 | .9909 | .9892 | .9869 | .9859 | .9847 | .9832 | .9815 |
| 83 | .9913 | .9904 | .9887 | .9862 | .9852 | .9840 | .9824 | .9806 |
| 84 | .9909 | .9900 | .9882 | .9856 | .9846 | .9833 | .9817 | .9798 |
| 85 | .9905 | .9896 | .9877 | .9850 | .9839 | .9826 | .9809 | .9789 |
| 86 | .9901 | .9892 | .9872 | .9844 | .9833 | .9819 | .9801 | .9781 |
| 87 | .9897 | .9888 | .9867 | .9838 | .9826 | .9812 | .9793 | .9772 |
| 88 | .9894 | .9883 | .9863 | .9832 | .9820 | .9806 | .9786 | .9764 |
| 89 | .9890 | .9879 | .9858 | .9826 | .9813 | .9799 | .9778 | .9755 |
| 90 | .9886 | .9875 | .9853 | .9820 | .9807 | .9792 | .9770 | .9747 |
| 91 | .9882 | .9871 | .9848 | .9814 | .9801 | | | |
| 92 | .9878 | .9867 | .9843 | .9808 | .9794 | | | |
| 93 | .9875 | .9863 | .9838 | .9803 | .9788 | | | |
| 94 | .9871 | .9859 | .9833 | .9797 | .9781 | | | |
| 95 | .9867 | .9855 | .9828 | .9791 | .9775 | | | |
| 96 | .9863 | .9851 | .9823 | .9785 | .9768 | | | |
| 97 | .9860 | .9847 | .9818 | .9779 | .9762 | | | |
| 98 | .9856 | .9842 | .9814 | .9772 | .9755 | | | |
| 99 | .9853 | .9838 | .9809 | .9766 | .9749 | | | |
| 100 | .9849 | .9834 | .9804 | .9760 | .9742 | | | |
| 101 | .9845 | .9830 | .9799 | .9754 | .9736 | | | |
| 102 | .9841 | .9826 | .9794 | .9748 | .9729 | | | |
| 103 | .9838 | .9821 | .9789 | .9742 | .9723 | | | |
| 104 | .9834 | .9817 | .9784 | .9736 | .9716 | | | |
| 105 | .9830 | .9813 | .9779 | .9730 | .9710 | | | |
| 106 | .9826 | .9809 | .9774 | .9724 | .9704 | | | |
| 107 | .9823 | .9805 | .9769 | .9718 | .9697 | | | |
| 108 | .9819 | .9801 | .9765 | .9712 | .9691 | | | |
| 109 | .9816 | .9797 | .9760 | .9706 | .9684 | | | |
| 110 | .9812 | .9793 | .9755 | .9700 | .9678 | | | |
| 111 | .9808 | .9789 | .9750 | .9694 | .9671 | | | |
| 112 | .9804 | .9785 | .9745 | .9688 | .9665 | | | |
| 113 | .9800 | .9780 | .9740 | .9682 | .9658 | | | |
| 114 | .9796 | .9776 | .9735 | .9676 | .9652 | | | |
| 115 | .9792 | .9772 | .9730 | .9670 | .9645 | | | |
| 116 | .9788 | .9768 | .9725 | .9664 | .9639 | | | |
| 117 | .9785 | .9764 | .9720 | .9658 | .9632 | | | |
| 118 | .9781 | .9759 | .9716 | .9652 | .9626 | | | |
| 119 | .9778 | .9755 | .9711 | .9646 | .9619 | | | |
| 120 | .9774 | .9751 | .9706 | .9640 | .9613 | | | |
| 121 | .9770 | .9747 | .9701 | .9634 | .9607 | | | |
| 122 | .9766 | .9743 | .9696 | .9628 | .9600 | | | |
| 123 | .9763 | .9739 | .9691 | .9622 | .9594 | | | |
| 124 | .9759 | .9735 | .9686 | .9616 | .9587 | | | |
| 125 | .9755 | .9731 | .9681 | .9610 | .9581 | | | |
| 126 | .9751 | .9727 | .9676 | | | | | |
| 127 | .9748 | .9723 | .9671 | | | | | |
| 128 | .9744 | .9718 | .9667 | | | | | |
| 129 | .9741 | .9714 | .9662 | | | | | |

500
500
100
500
500

10

[illegible]

| Observed Temperature in °F. | Degrees A.P.I. at 60°F. | | |
|-----------------------------------|--|--------------------|--------------------|
| | 10.0 to 24.9 | 25.0 to 34.9 | 35.0 to 50.9 |
| | Volume at 60°F. Occupied by Unit Volume at Indicated Temperature. | | |
| 130 | 0.9737 | 0.9710 | 0.9657 |
| 131 | .9733 | .9706 | .9652 |
| 132 | .9730 | .9702 | .9647 |
| 133 | .9726 | .9698 | .9642 |
| 134 | .9723 | .9694 | .9637 |
| 135 | .9719 | .9690 | .9632 |
| 136 | .9715 | .9686 | .9627 |
| 137 | .9712 | .9682 | .9622 |
| 138 | .9708 | .9678 | .9618 |
| 139 | .9705 | .9674 | .9613 |
| 140 | .9701 | .9670 | .9608 |
| 141 | .9697 | .9666 | .9603 |
| 142 | .9693 | .9662 | .9598 |
| 143 | .9690 | .9657 | .9593 |
| 144 | .9686 | .9653 | .9588 |
| 145 | .9682 | .9649 | .9583 |
| 146 | .9678 | .9645 | .9578 |
| 147 | .9674 | .9641 | .9573 |
| 148 | .9671 | .9636 | .9569 |
| 149 | .9667 | .9632 | .9564 |
| 150 | .9663 | .9628 | .9559 |
| 151 | .9659 | .9624 | |
| 152 | .9656 | .9620 | |
| 153 | .9652 | .9616 | |
| 154 | .9649 | .9612 | |
| 155 | .9645 | .9608 | |
| 156 | .9641 | .9604 | |
| 157 | .9638 | .9600 | |
| 158 | .9634 | .9596 | |
| 159 | .9631 | .9592 | |
| 160 | .9627 | .9588 | |
| 161 | .9623 | .9584 | |
| 162 | .9620 | .9580 | |
| 163 | .9616 | .9576 | |
| 164 | .9613 | .9572 | |
| 165 | .9609 | .9568 | |
| 166 | .9605 | .9564 | |
| 167 | .9602 | .9560 | |
| 168 | .9598 | .9555 | |
| 169 | .9595 | .9551 | |
| 170 | .9591 | .9547 | |
| 171 | .9587 | .9543 | |
| 172 | .9584 | .9539 | |
| 173 | .9580 | .9535 | |
| 174 | .9577 | .9531 | |
| 175 | .9573 | .9527 | |
| 176 | .9569 | .9523 | |
| 177 | .9565 | .9519 | |
| 178 | .9562 | .9514 | |
| 179 | .9558 | .9510 | |
| 180 | .9554 | .9506 | |
| 181 | .9551 | .9502 | |
| 182 | .9547 | .9498 | |
| 183 | .9544 | .9494 | |
| 184 | .9540 | .9490 | |
| 185 | .9537 | .9486 | |
| 186 | .9533 | .9482 | |
| 187 | .9530 | .9478 | |
| 188 | .9526 | .9474 | |
| 189 | .9523 | .9470 | |
| 190 | .9519 | .9466 | |
| 191 | .9515 | .9462 | |
| 192 | .9512 | .9458 | |
| 193 | .9508 | .9454 | |
| 194 | .9505 | .9450 | |
| 195 | .9501 | .9446 | |

